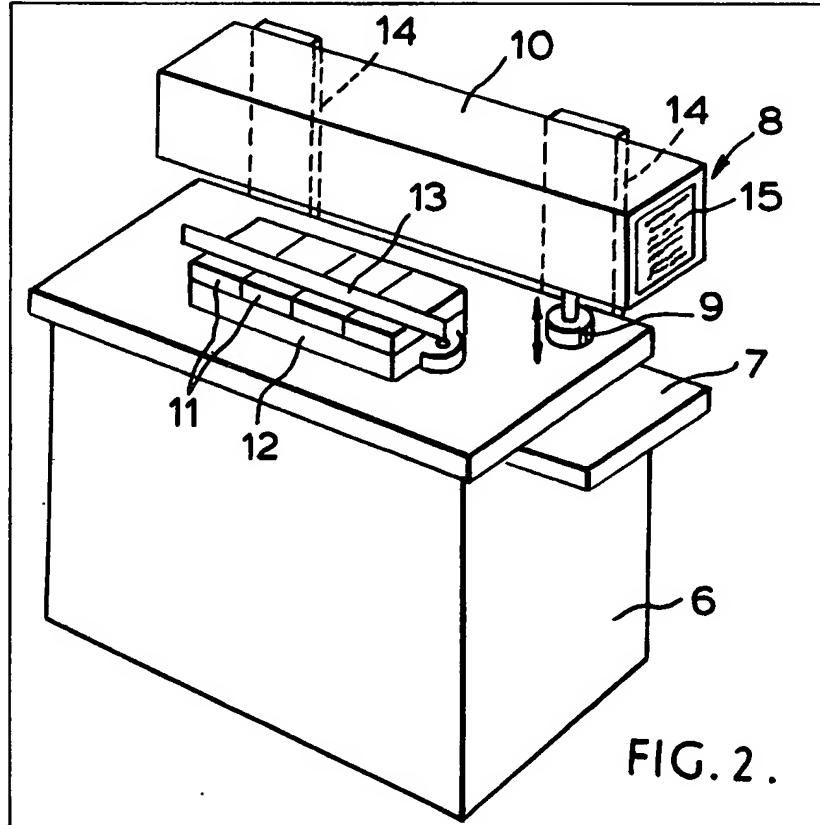

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(71) Applicants
Alexander James
Ciniglio,
59 Kettlebury Way,
Marden Ash,
Chipping Ongar,
Essex.
(72) Inventors
Alexander James Ciniglio
(74) Agent and/or Address for
Service
Stanley Popplewell
Pools,
57 Lincoln's Inn Fields,
London WC2A 3LS.

(54) Printing machine

(57) A printing machine comprises a tamp 9, a cliche or cliches 11 bearing an image and means for inking the image(s), the tamp being movable between the cliche(s) and an object to be printed on to transfer an ink image from the cliche(s) to the object, and is characterised in that a plurality of images are provided, and in that the tamp 9 is movable to select and transfer said ink images one at a time from the cliche 11 to an article held on support 7.



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The drawing(s) originally filed was/were informal and the print here reproduced is taken from a later filed formal copy.

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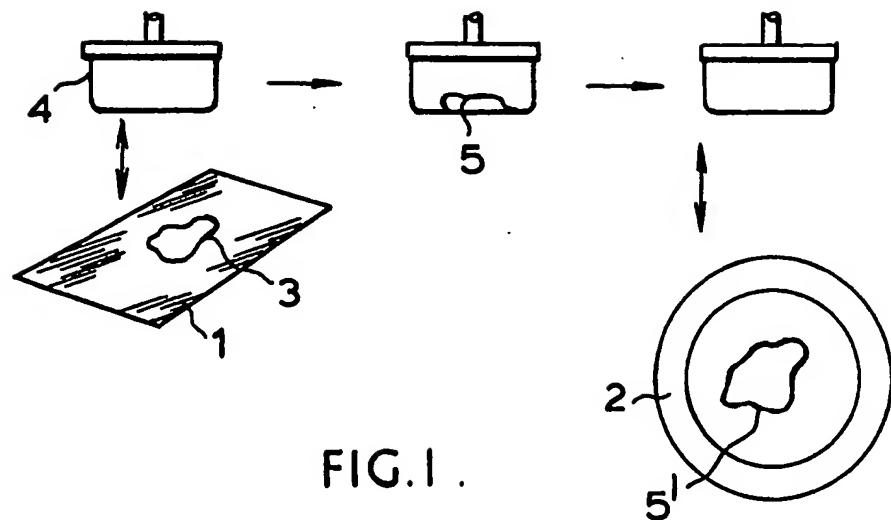


FIG.1.

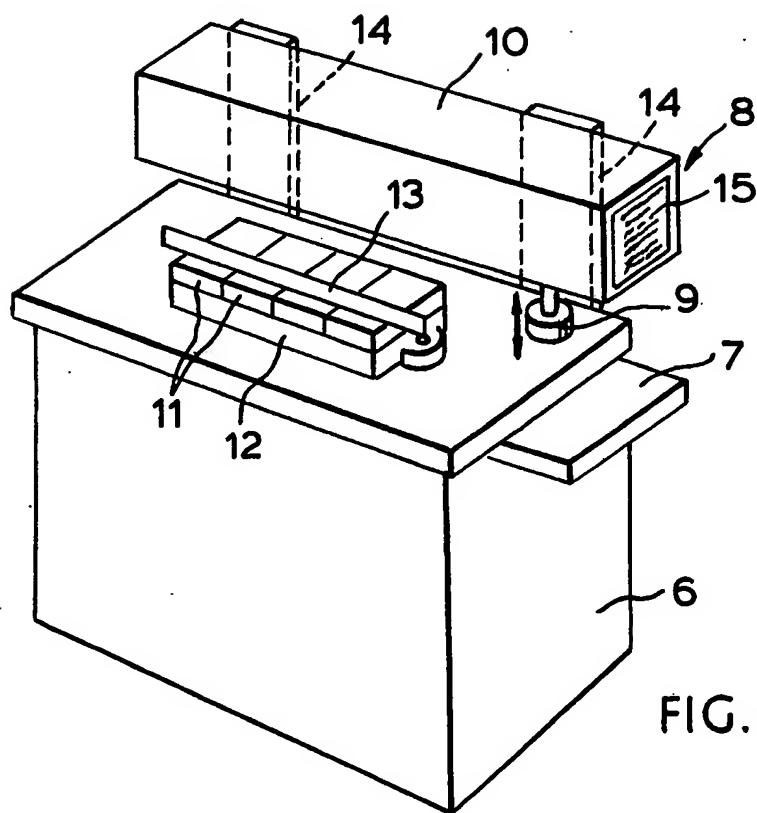


FIG.2.

SPECIFICATION**Printing machine**

5 The present invention relates to printing machines of the type in which ink is transferred from a printing plate or cliche to an article to be printed by a deformable tamp, generally made of silicone rubber. The deformability of the tamp allows printing onto 10 non-planar surfaces such as dinner plates, bottles, etc.

In such machines, an image to be printed is engraved or etched on a printing plate or cliche. The cliche is then inked and wiped to leave ink only in the 15 etched grooves. A silicone rubber tamp is pressed onto the cliché to lift the ink from the grooves and is then pressed onto the article to leave a printed image on the article. A variety of tamp shapes are employed to suit the shape and size of the article and 20 the size of the image to be printed.

Where it is desired to print a variety of colours, a tamp and a cliche is used to print each colour. The tamps and cliches are arranged in a row and articles are passed down the row to be printed with each 25 colour in turn. This requires an extremely accurately indexing system for moving the article into position at each colour printing station.

One object of the present invention is to provide a multicolour or multiple image printing machine 30 wherein the article is located at one position during printing.

One aspect of the invention provides a printing machine comprising a tamp and a plurality of images on a cliche or cliches, means for moving the 35 tamp to select and take an image from the or a cliche, and means for touching the tamp against an article to deposit the image on the article.

A single cliche may be employed, bearing a plurality of images to be selected from.

40 Other features of the invention will be apparent from the following description of the invention by way of example with reference to the accompanying drawings, in which:

Figure 1 illustrates a printing process;

45 Figure 2 illustrates a machine embodying features of the invention.

In Figure 1, a cliche 1 has an image etched on it to a depth of say 0.2 thousandths of an inch. To print the image on plate 2, ink is first scooped onto the 50 plate and the plate then wiped with a blade (not shown) to remove ink from the top surface of the cliche to leave ink in the etched groove 3 forming the image. Tamp 4 of silicone rubber is pressed onto the cliche 1 and lifts off the ink image 5. The tamp 4 is then moved to above plate 2 and then pressed on the plate where it leaves the image 5'.

In Figure 2 a machine 8 embodying features of the invention has a stand 6. A printing table 7 is mounted at the front of the machine. The table 7 will 60 be provided with a nest (not shown) for receiving an article to be printed. The nest may be dedicated to a single type of article, or preferably adapted to be adjusted to receive a wide range of articles. The nest locates successively deposited articles in identical 65 positions. Tamp 9 depends from control box 10,

which is supported on legs 14, and is mounted to be movable along two axes, vertically and fore to aft of the machine.

70 A bed 11 holds a plurality of cliches 12. The bed is mounted to be moved sideways of the machine. A blade 13 wipes across the top face of the cliches as the bed is moved sideways. Means (not shown) are provided to put ink onto the top face of the cliches.

Tamp 9 may be driven vertically electromagnetically, and fore to aft by a lead screw.

To operate the machine the bed 12 is moved to one side where ink is scooped onto the cliches, the bed is then moved to pass the cliches under the blade 13 to wipe off excess ink and position the 80 cliches under the fore to aft path of the tamp 9. Tamp 9 is then driven into position above a selected image or cliche, and then pressed down onto the cliche to lift an ink image therefrom. The tamp is then raised and driven to the front of the machine to a station 85 above the printing table 7, where it is pressed down onto the article to be printed on. It is preferred that the station be a constant position, and that the nest on table 7 be adjustable to locate the article for printing in the desired place. After printing the first

90 image the tamp may then be returned to a position above another cliche to take a second different image for printing on the article. Where it is desired to print a multicolor image on an article a series of cliches will be employed each bearing an image for a 95 respective colour and each cliche will be coated with the appropriate colour ink. The tamp then travels between the article and each cliche in turn.

It is anticipated a single tamp may be used to print the different colours. However, where there is difficulty in transferring all of an ink image onto a article 100 it may be found desirable to mount two or more tamps in tandem on the control box moving them in unison.

The machine is also able to print from a selection 105 of images, which need not be in different colours. This may be of use when printing data codes or other variable information. The cliches will carry a range of information and the tamp moved to a selected position to pick the desired information to 110 print it on an article. It can be seen that a single cliche may be employed, carrying a plurality of images, and that a single colour ink may be used to ink the whole cliche or plurality of cliches.

It is envisaged that the machine will be particularly 115 useful for printing on a small number of articles, in a range of designs from those requiring a single image in one colour to a selection of images in multiple colours.

The printing table 7 may carry a simple indexing 120 mechanism. For example a rotating table so that a second article may be placed in a nest while a first article is being printed. Also a jig may be provided for turning an article over, for printing on more than one side of the article.

125 Movement of the tamp will be controlled precisely by a programmable microprocessor. Fine adjustment will be provided to allow setting up of the machine and a memory facility to store printing programmes for recall. Sideways adjustment of the 130 tamp relative to the cliche(s) may be provided,

preferably by controlling the sideways movement of bed 12. A control board 15 may be provided on the control box 10. Which houses drive for the tamp and a microprocessor.

5

CLAIMS (Filed on 26 July 1983)

1. A printing machine comprising a tamp and a plurality of images on a cliche or cliches, means for inking one or more images to form an ink image and means for moving the tamp to select and take an ink image from the or cliche and to touch the tamp against an article to deposit the ink image there-upon.
- 10 2. A machine as claimed in claim 1, wherein a plurality of cliches is provided, each cliche bearing one or more images.
- 15 3. A machine as claimed in claim 1 or 2, wherein the inking means is adapted to ink each cliche or
- 20 4. A machine as claimed in claims 1, 2 or 3, wherein a plurality of inking means is provided to enable multicolour printing.
- 25 5. A printing machine, substantially as hereinbefore described with reference to the accompanying drawings.

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